MOTOROLA
# SEMICONDUCTORS

P.O. BOX 20912 • PHOENIX, ARIZONA 85036

# MHW4171
# MHW4172

## Advance Information

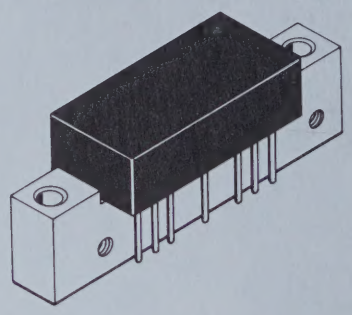
## The RF Line

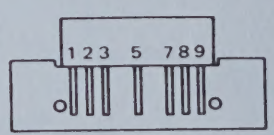
**53-CHANNEL**
**CATV INPUT/OUTPUT**
**TRUNK AMPLIFIERS**

### 400 MHz CATV AMPLIFIER MODULE

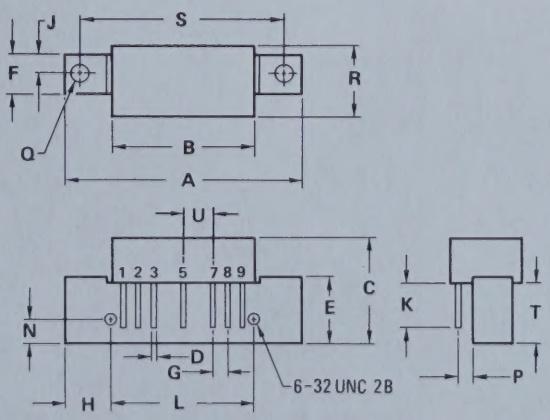
. . . designed specifically for 400 MHz/53-channel applications. Features all gold metallization system.

- Specified for 53-Channel Performance
- Broadband Power Gain — @ f = 40–400 MHz
  $G_p$ = 17.0 dB (Typ)
- Broadband Noise Figure — @ f = 400 MHz
  NF = 6.5 dB (Typ) MHW4171
  7.5 dB (Typ) MHW4172
- Superior Gain, Return Loss and DC Current Stability with Temperature
- All Gold Metallization






PIN 1. RF INPUT
2, 3, 7, 8. DC AND RF GROUND
5. $V_{DC}$
9. RF OUTPUT




| DIM | MILLIMETERS MIN | MILLIMETERS MAX | INCHES MIN | INCHES MAX |
|---|---|---|---|---|
| A | – | 45.08 | – | 1.775 |
| B | 26.42 | 26.92 | 1.040 | 1.060 |
| C | 20.57 | 21.34 | 0.810 | 0.840 |
| D | 0.46 | 0.56 | 0.018 | 0.022 |
| E | 11.81 | 12.95 | 0.465 | 0.510 |
| F | 7.87 | 8.13 | 0.310 | 0.320 |
| G | 2.41 | 2.67 | 0.095 | 0.105 |
| H | 9.65 | 9.78 | 0.380 | 0.385 |
| J | 3.96 BSC | | 0.156 BSC | |
| K | 6.86 | 7.37 | 0.270 | 0.290 |
| L | 25.40 BSC | | 1.000 BSC | |
| N | 4.06 | 4.32 | 0.160 | 0.170 |
| P | 2.16 | 2.92 | 0.085 | 0.115 |
| Q | 3.81 | 4.19 | 0.150 | 0.165 |
| R | – | 15.11 | – | 0.595 |
| S | 38.10 BSC | | 1.500 BSC | |
| T | 11.05 | 11.43 | 0.435 | 0.450 |
| U | 4.95 | 5.21 | 0.195 | 0.205 |

NOTE:
1. MOUNTING HOLES WITHIN 0.25 mm (0.010) DIA OF TRUE POSITION AT MAXIMUM MATERIAL CONDITION.

**CASE 714-02**

This is advance information and specifications are subject to change without notice.

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## ABSOLUTE MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| RF Voltage Input | $V_{in}$ | +70 | dBmV |
| DC Supply Voltage | $V_{CC}$ | +28 | Vdc |
| Operating Case Temperature Range | $T_C$ | -20 to +100 | °C |
| Storage Temperature Range | $T_{stg}$ | -60 to +100 | °C |

## ELECTRICAL CHARACTERISTICS ($V_{CC}$ = 24 Vdc, $T_A$ = +25°C, 75 Ω system unless otherwise noted)

| Characteristic | Symbol | MHW4171 | | | MHW4172 | | | Unit |
|---|---|---|---|---|---|---|---|---|
| | | Min | Typ | Max | Min | Typ | Max | |
| Frequency Range | BW | 40 | — | 400 | 40 | — | 400 | MHz |
| Power Gain — 50 MHz | $G_p$ | 16.5 | 17.0 | 17.5 | 16.5 | 17.0 | 17.5 | dB |
| Slope | S | 0.5 | +1.2 | +2.0 | 0.5 | +1.2 | +2.0 | dB |
| Gain Flatness | — | — | ±0.1 | ±0.2 | — | ±0.1 | ±0.2 | dB |
| Return Loss — Input/Output 40–300 MHz | IRL/ORL | 18 | — | — | 18 | — | — | dB |
| ($Z_o$ = 75 Ohms) 300–400 MHz | | 16 | — | — | 16 | — | — | |
| Second Order Intermodulation Distortion | IMD | | | | | | | dB |
| ($V_{out}$ = +50 dBmV, Ch 2, 13, R) | | — | -76 | -68 | — | -78 | -70 | |
| ($V_{out}$ = +46 dBmV, Ch2, M6, M15) | | — | -65 | — | — | -72 | — | |
| Cross Modulation Distortion | | | | | | | | dB |
| ($V_{out}$ = +50 dBmV) 35-Channel FLAT | $XMD_{35}$ | — | -56 | -51 | — | -60 | -56 | |
| ($V_{out}$ = +46 dBmV) 53-Channel FLAT | $XMD_{53}$ | — | -59 | — | — | -62 | — | |
| Signal-to-Triple Beat Noise | | | | | | | | dB |
| ($V_{out}$ = +50 dBmV) 35-Channel FLAT | $TB_{35}$ | — | -55 | -51 | — | -59 | -56 | |
| ($V_{out}$ = +46 dBmV) 53-Channel FLAT | $TB_{53}$ | — | -55 | — | — | -58 | — | |
| Noise Figure | NF | | | | | | | dB |
| (f = 300 MHz) | | — | 5.5 | 7.0 | — | 6.5 | 8.0 | |
| (f = 400 MHz) | | — | 6.5 | — | — | 7.5 | — | |
| DC Current ($V_{DC}$ = 24 ±0.5 Vdc, $T_C$ = 30°C) | $I_{DC}$ | — | 160 | 190 | — | 200 | 230 | mA |

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